

very much as we would reply to the above correspondent, viz: that the north and east winds are cold in and of themselves, quite independent of the temperature of Lake Michigan, and if they do produce cold weather at Chicago or at Riley station it is not because the Chicago River has drawn cold water to the southern part of the lake nor because the lake has a cooling influence on the air as far west as Riley station.

The direct influence of the lake water upon the temperature of the air is appreciable for a few miles only; the indirect influence, by reason of the formation of cloud and rain, may be felt for 50 miles. This subject was studied very thoroughly by Prof. Alexander Winchell, of Ann Arbor, Mich., in a paper published in the Proceedings of the American Association for the Advancement of Science for 1870, Vol. XIX, pp. 106-117. Two charts accompanied this paper showing the mean monthly temperatures for July and January. It may be assumed that the means were taken by the ordinary rule  $\frac{1}{4}(7+2+2 \times 9)$ . These charts show a great irregularity in the isotherms, which irregularities may be ascribed in part to direct atmospheric action, since the Lake region is a cloudy and rainy region toward which all the storm tracks of the American continent converge; it is also the region where warm southerly and cool northerly winds mingle with a special frequency. Owing to the cloud, rain, and storm frequency this is also a region of heavy forests and lakes and swamps, both large and small. The latter are undoubtedly the product of the former. It is not right to say that the Lake region is cool, stormy, and moist because of the lakes, but because of the presence of the storms.

If the lakes have any decided influence on the temperature it must be only a slight differential effect, which would become visible by comparing the temperatures on opposite sides of a lake when the general wind is blowing steadily in one direction. Professor Winchell's isotherms for July show that stations on opposite sides of Lake Michigan, directly east and west of each other and close to the lake shore, have precisely the same temperature from Chicago and New Buffalo, at the south end up to Mackinaw at the north. His isotherms for Lake Ontario show almost the same thing. His isotherms for January, on the other hand, show that the west coast of Lake Michigan is  $5^{\circ}$  or  $10^{\circ}$  colder than the east shore, that is to say, the air whose temperature averages between  $20^{\circ}$  and  $30^{\circ}$  grows slightly warmer as the west winds of January blow eastward over the frozen lake. In crossing over the Peninsula of Michigan from west to east temperatures generally grow colder by  $3^{\circ}$  or  $4^{\circ}$ , due to the fact that the warming influence of the clouds on the east shore of Lake Michigan disappears as we proceed toward the east. Thus, the January isotherm of  $23^{\circ}$ , passing near Chicago, runs northward to Northport, Mich., thence south to Lansing, then north until it nearly reaches Alpena, and thence eastward over Lake Huron, and southeast into New York.

#### HYDROGRAPHY OF NICARAGUA.

For several years past we have published in the MONTHLY WEATHER REVIEW all the meteorological data that have been

offered to us relative to the climate of Central America, especially Panama and Nicaragua. These publications have been appreciated by those who are studying the conditions that must attend any effort to construct inter-oceanic canals across those portions of Central America. Through the activity of the engineers employed by the boards appointed by Congress to investigate the feasibility of a canal between the Atlantic and Pacific Oceans (viz: the "Canal Board of 1895," the Nicaragua Canal Commission of 1897, and the Isthmian Canal Commission of 1899), a large addition has been made during the past five years to our knowledge of the climate of Central America. In the Twentieth Annual Report of the United States Geological Survey is given a review of the rainfall data and the height and flow of rivers and the fluctuations of Lake Nicaragua (as also the evaporation of water, the formation of river sediments, and other matters affecting the canal question) in a short paper on the hydrography of Nicaragua by Arthur P. Davis, of the United States Geological Survey, Engineer to the Nicaragua Canal Commission of 1897. Still more recent data will, undoubtedly, be presented to Congress in the final report of the Isthmian Canal Commission appointed to decide on the relative merits of the various proposed canals.

#### OFFICIAL ORGANS.

All communications between the Chief of the Weather Bureau and the observers, both regular and voluntary, proceed by formal letters or circulars and are never sent through any official organ, so-called. For fear lest some mistake may be made in the minds of our readers it is proper to say that whatever is printed in the MONTHLY WEATHER REVIEW under the name of any contributor, officer, or editor is to be viewed as a personal expression and without any official authority, unless that phrase is expressly used by the Chief himself, or his authorized representative.

Not long since a circular was received announcing the establishment of a new journal to be published in the interest of the voluntary observers of the Weather Bureau. These observers have been voluntarily keeping weather records and communicating copies to the Weather Bureau for the public benefit, and the Weather Bureau, in return, has done for them all that it is officially able to do in the way of supplying public documents and, in exceptional cases, thermometers and other instruments.

The first letter received by the Chief of Bureau relative to the new journal, spoke of it as the organ of a scientific society, and to that letter a most cordial response was given, but no article was "contributed" by the Chief. The subsequent letter and circular, and the first number itself of the journal, shows that it aspires to be the official organ of the voluntary observers of the Weather Bureau, a project to which the Chief of the Weather Bureau can not possibly be expected to lend any encouragement. As a journal of meteorology, climatology, and allied sciences Earth and Air is to be heartily encouraged by the Weather Bureau, just as it encourages Popular Science and all other scientific journals, but there is no need for its existence as an official organ.

#### THE WEATHER OF THE MONTH.

By ALFRED J. HENRY, Professor of Meteorology.

The month was characterized by general stagnation in the lower layers of the atmosphere. East of the Rocky Mountains and north of the Gulf States the weather was abnormally warm, the monthly mean temperatures surpassing, in many instances, those registered in tropical countries. The skies were generally free from clouds, especially at night, and rainfall was deficient over large areas east of the Mississippi. In Nebraska, the Dakotas, Minnesota, northern Wis-